

## Stable Platform for Optical Communications (SPOC), Phase I

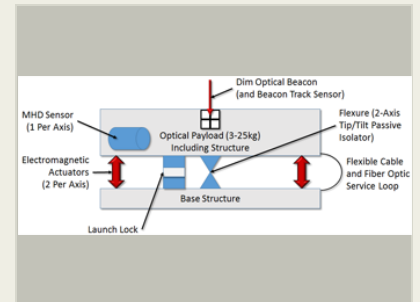
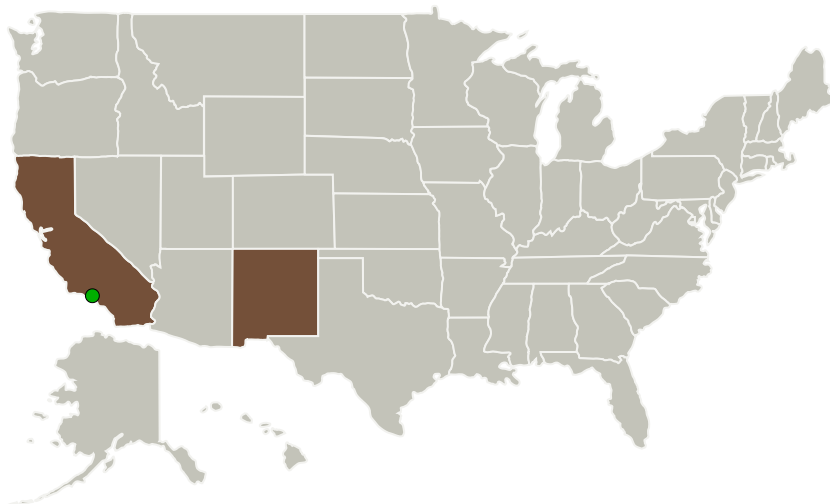
Completed Technology Project (2015 - 2015)



## Project Introduction

NASA is seeking innovative compact, lightweight, space-qualifiable vibration isolation platforms for payloads massing between 3 and 25 kg that require less than 5 W of power and mass less than 3 kg that will attenuate an integrated angular disturbance of 150 micro-radians to less than 0.15 micro-radians (1-sigma). ATA has a long track record of producing stabilized platforms to host small optical payloads. Building on a previous NASA SBIR, ATA now produces the stable platform used in NASA's Lunar Lasercomm Space Terminal (LLST) and Laser Communications Relay Demonstration (LCRD) programs. ATA will create a Stable Platform for Optical Communications (SPOC) that could host the laser communications collimator telescope and provide a stabilized platform to prevent the 150-microradian spacecraft disturbance environment from reaching the laser communications terminal. Advances in the suspension flexure, the platform structure, and actuators will be required to meet the size, weight and power requirements. One challenging requirement is that an angular-motion sensor is required for the control system. Gyros exist that can measure adequately but they are too heavy, too large, and use too much power. ATA will develop a small, lightweight, nanoradian-noise class angular rate sensor based on our proven MHD technology to meet the challenging angular disturbance attenuation requirement.

## Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Applied Technology Associates	Lead Organization	Industry	Albuquerque, New Mexico
● Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California

Primary U.S. Work Locations	
California	New Mexico

## Project Transitions

▶ **June 2015:** Project Start

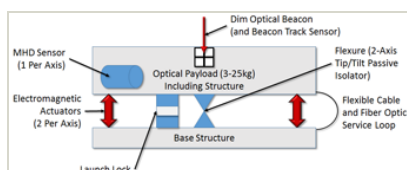
✓ **December 2015:** Closed out

**Closeout Summary:** Stable Platform for Optical Communications (SPOC), Phase I Project Image

**Closeout Documentation:**

- Final Summary Chart Image(<https://techport.nasa.gov/file/139832>)

## Images



**Briefing Chart Image**

Stable Platform for Optical Communications (SPOC), Phase I  
(<https://techport.nasa.gov/image/132143>)

## Organizational Responsibility

**Responsible Mission Directorate:**

Space Technology Mission Directorate (STMD)

**Lead Organization:**

Applied Technology Associates

**Responsible Program:**

Small Business Innovation Research/Small Business Tech Transfer

## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

Carlos Torrez

**Principal Investigator:**

Nick Jacka

## Technology Maturity (TRL)

Start: **3**  
Current: **4**  
Estimated End: **4**



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### Technology Areas

#### Primary:

- TX05 Communications, Navigation, and Orbital Debris Tracking and Characterization Systems
  - └ TX05.1 Optical Communications
    - └ TX05.1.4 Pointing, Acquisition and Tracking (PAT)

### Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System